# ISOLATION AND IDENTIFICATION OF *Vibrio parahaemolyticus* FROM HEALTHY AND DISEASED AQUACULTURE FISH (TILAPIA) IN KENYIR LAKE

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**BY**

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Adalah ini diakui dan disahkan bahawa laporan penyelidikan ilmiah tahun akhir bertajuk "Isolation and Identification of *Vibrio parahaemolyticus* From Healthy and Diseased Aquaculture Fish (Tilapia) in Kenyir Lake" oleh Lee Chan Young, no matrik UK 4127 telah diperiksa dan semua pembetulan yang disarankan telah dilakukan. Laporan ini dikemukakan kepada Jabatan Sains Biologi sebagai memenuhi sebahagian daripada keperluan memperolehi ijazah Sarjana Muda Sains: Pemuliharaan Dan Pengurusan Biodiversiti, Fakulti Sains dan Teknologi, Kolej Universiti Sains dan Teknologi Malaysia.

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# ABSTRAK

*Vibrio parahaemolyticus (V. parahaemolyticus)* adalah satu bakteria pathogen kepada hidupan air tawar, payau dan laut, khasnya terhadap spesies ikan. Objektif kajian ini adalah i) untuk pemencilan dan pengecaman terhadap *V. parahaemolyticus* daripada ikan Tilapia yang sihat, berpenyakit dan mati di Tasik Kenyir, Terengganu, ii) untuk pengesanan sensitiviti *V. parahaemolyticus* terhadap beberapa antimikrob yang biasa digunakan dan iii) untuk mengesahkan kehadiran plasmid dalam *V. parahaemolyticus*. Enam puluh satu sampel ikan tilapia telah diambil, antaranya 12 ikan adalah sihat dan 49 ikan adalah berpenyakit. Sejumlah 13 pemencilan *V. parahaemolyticus* dijumpai dari organ insang, buah pinggang, hati, usus dan mata ikan Tilapia yang berpenyakit. Jenis agar yang digunakan untuk pemencilan bakteria adalah TSA, MacConkey, TCBS dan agar darah. Beberapa ujian biokimia dijalankan untuk pengecaman *V. parahaemolyticus*, iaitu perwarnaan Gram, ujian oksidase, TSI, SIM dan ujian Simmons Citrate. Dalam pengesan agen antimikrob didapati *V. parahaemolyticus* menunjukkan sensitiviti yang tinggi (melebihi 61.5%) terhadap tetracycline, chloramphenicol dan kanamychin. Dalam pengesahan kehadiran plasmid didapati hanya tujuh dari 13 *V. parahaemolyticus* menunjukkan kehadiran plasmid. Keputusan menunjukkan tiada kaitan plasmid dalam *V. parahaemolyticus* terhadap kawasan mana sampel diambil dan bahagian organ ikan yang disampel. Pada keseluruhannya, kehadiran *V. parahaemolyticus* mungkin menjadi salah satu faktor penyebab kematian ikan Tilapia di Tasik Kenyir.

# ABSTRACT

*Vibrio parahaemolyticus* (*V. parahaemolyticus*) is a pathogen in fresh water, brackish water and marine organisms, especially fish species. The objectives of this research are i) to isolate and identify *V. parahaemolyticus* from healthy, diseased and dead fish in Kenyir Lake, Terengganu, ii) to determine the sensitivity of *V. parahaemolyticus* to commonly used antimicrobial agents and iii) to verify the appearance of plasmid in *V. parahaemolyticus* isolated from fish. Sixty one individuals of Tilapia fish were sampled. Twelve fishes were apparently healthy and 49 fishes were diseased. A total of 13 *V. parahaemolyticus* isolated were recovered from the gill, kidney, liver, intestine and eye of diseased Tilapia fish. The agars used for isolation for this bacterium were TSA, MacConkey, TCBS and Blood agar. Some biochemical tests were done for identification of *V. parahaemolyticus*, which were Gram Staining, Oxidase test, TSI, SIM and Simmons Citrate test. In detection of antimicrobial agents, *V. parahaemolyticus* showed high sensitivity (over 61.5%) to tetracycline, chloramphenicol and kanamycin. In verification of the appearance of plasmid, only seven out of 13 *V. parahaemolyticus* isolates indicated the appearances of plasmid. Results showed there is no correlation between the presence or absence of plasmids in the isolates and the antimicrobial sensitivity or resistance of *V. parahaemolyticus*. As an assumption, the presence of *V. parahaemolyticus* may be one of the factors causing the death of Tilapia fish in Kenyir Lake.